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ACIS Army Satcom-on-the-Move Demonstration

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The U. S. Army has an ever increasing need for improved, higher capacity, mobile communication capabilities. To this end, the U.S. Army has been heavily involved with the Advanced Communications Technology Satellite (ACTS) Program. In addition to their ongoing exercises with the 11 VSAT terminals, the U. S. Army, through the Jet Propulsion Laboratory (JPL), has conducted a series of field demonstrations and experiments of mobile satellite communications (satcom) via ACTS and the ACTS Mobile Terminal (AMT). "100 tests, aptly named the ACTS Satcom-on-the-Move exercise, demonstrated a variety of advanced, high risk, mobile satcom technologies.

Throughout the two months (June, July 1994) that these tests were conducted, seven different test sites were visited. These sites were JPL, Fort Huachuca, Fort Hood, Fort Gordon, Fort Monroe, the Pentagon, and Fort Monmouth. One of the main advantages of using ACTS and the AMT for mobile satcom is the higher capacity throughput of the system as compared to current military and commercial mobile satcom systems. This setup was capable of providing a full-duplex communications link from 2.4 to 128 kbps. Such a system is an order of magnitude improvement over current mobile satcom, and the current terrestrial communication systems (SINCGARS) that the U.S. Army utilizes.

Through this tour, several new and exciting military applications for mobile satcom were accomplished. Most notably, compressed video was demonstrated at both 64 and 128 kbps. This video was used for such applications as mobile video teleconferencing (MVTC) and advanced image scouting. Three other lower rate configurations of the AMT were also utilized. They included the baseline AMT mode (2.4/4.8/9.6 kbps full-duplex voice and data communications), an Army AMT mode (aggregate 9.6 kbps full-duplex communications comprised of two signals, 4.8 kbps voice and 2.4 kbps GPS data sources multiplexed together), and an Army mode of operation (analog FM SINCGARS radio voice communications translated in frequency up to Ka-band for satellite communications).

Several hundreds of interested military personnel viewed the operation of this equipment, and were duly impressed. As the ACTS Experiments Program proceeds, and more technological improvements in the AMT design are accomplished, even higher data rates (potentially up to 512 kbps full-duplex communications) will be possible. This will open up the ACTS Program, and

specifically the AMI, to an even wider range of military applications for evaluation.